VAPOR GROWTH METHOD FOR COMPOUND SEMICONDUCTOR

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Abstract

PURPOSE:To enable atomic layer epitaxy which is capable of yielding a high-purity crystal at a low temp. in a growth method in which a group III org. metal raw material and group V raw material are alternately supplied by specifying the group III raw material, then cracking and supplying the two gaseous raw materials.

CONSTITUTION:The org. metal contg. 1-2 bonds of the group III atom and halogen atom in the molecule, for example, diethyl gallium chloride, is used as the group III raw material. Said material is bubbled by gaseous carrier H2 12 in a bubbler 11 and is introduced into a reaction tube 13. A reactor 13 is heated at this time and the mid-point piping is insulated by a heater 14. The group V raw material is bubbled in the same manner as mentioned above and is introduced into the reactor 13. Arsine 17 is also introduced via a flow rate controller 18 into the reactor. A substrate crystal 19 is installed together with a susceptor 20 in a growth region and the light of a deuterium lamp 22 is introduced into the reactor from a quartz window 21 thereof. The raw material cracking region is kept at a prescribed temp. and the raw materials are cracked. The cracked group III and V raw materials are alternately supplied to the substrate 19, by which the org. metal atom layer of the compd. semiconductor is epitaxially grown on the substrate.